INGALS. (E.F.)

Suppurative Inflammation of the Antrum.

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SUPPURATIVE INFLAMMATION OF THE ANTRUM.

The mucous membrane lining the antrum of Highmore is liable to suppurative inflammation and a collection of pus which may partially or completely fill the cavity, if its opening into the middle meatus of the nasal cavity remains patent; but when the latter becomes closed by inflammation and swelling of the Schneiderian membrane, the pressure caused by the continued formation of pus may cause great expansion of the bony walls, and corresponding increase in the size of the cavity. This condition has been termed abscess of the antrum, but as, excepting the presence of pus, it is usually devoid of all the characteristics of an abscess of the soft tissues the term suppurative inflammation is more appropriate.

From the location of the antrum, immediately above the bicuspid and molar teeth, the fangs of which often perforate its floor; and from its more or less free communication with the nasal cavity, it would be expected that disease of its lining membrane would be frequent, resulting either from affections of the teeth, or extending from the nasal mucous membrane, which is so often inflamed. As a matter of fact, however, this disease cannot be considered common, for many physicians practice a lifetime without meeting examples of the kind. However, it is doubtless more frequent than generally supposed, for it not infrequently happens that the affection is simply called catarrh, and its real nature is overlooked for want of a careful examination. Inflammations in this locality are occasionally caused by external injury, and they are sometimes due to extension of the same process from the nasal

cavity, but by far the most frequent cause is disease of the teeth. The normal opening from this cavity into the middle meatus varies from the size of a crow-quill to an opening nearly large enough to admit the tip of the little finger; in the latter condition the products of inflammation may be readily discharged, and a spontaneous cure may result without suppuration, but when the orifice is small it may readily become closed and then the pent up secretions become purulent and offensive. In the earlier part of the affection the patient is liable to experience a sense of weight in the part, or to suffer from more or less tenderness and pain in the teeth, cheek, orbit or frontal sinuses, but in some instances none of these symptoms are present, and in chronic cases they are often absent, doubtless on account of the secretions having found free exit into the nasal cavity, as the swelling of the acute inflammation subsided.

The formation of pus is usually indicated by an increase of the pain, which becomes of a throbbing character, and these symptoms are often attended by rigors alternating with flashes of heat. Together with these symptoms an unusual discharge is usually present from the naris of the corresponding side, which may be either blown from the nostril or drawn back into the throat. This discharge is most abundant early in the morning, or at any time after the patient has been long in a recumbent posture, but it usually occurs also at irregular intervals during the day.

In chronic cases the discharge is purulent and generally exceedingly offensive—much of the annoyance which the patient experiences being due to the offensive odor and taste of the pus which trickles into the throat during sleep.

Persistent discharge, from one nostril only, is usually due either to a foreign body, or to the disease under consideration, but nasal polypi, suppurative inflammation of the ethmoidal or frontal sinuses and

polypi, or malignant growths of the antrum, may cause similar symptoms.

Where pain in the region of the antrum and an offensive purulent discharge from the naris of the corresponding side are present, there can be little doubt about the diagnosis, but in all cases careful inspection of the mouth and a critical rhinoscopic examination must be made. Upon examining the naris a collection of pus will often be seen in the middle meatus, and a streak of pus may be seen running down across the middle portion of the middle turbinated body. If this is wiped away it is apt to return in a few minutes. But in cases in which secretion takes place slowly, the patient may need to keep the head erect for many hours, and then lie down with the diseased side uppermost before the discharge will return.

In many cases the inferior turbinated body is much swollen, so that it is at first difficult to thoroughly inspect the parts, but by the application of a small amount of cocaine the turgescence will be reduced, and then with the aid of a rhinoscopic speculum, reflector, and good light, foreign bodies or polypi may be readily detected or excluded from the problem of diagnosis. This done, there remains but one affection with which disease of the antrum is liable to be confounded, viz.: suppurative inflammation of the ethmoidal cells. Between these affections the diagnosis is sometimes exceedingly difficult, but in disease of the ethmoidal cells there is usually much less pain than in disease of the antrum; the discharge from the nose is less abundant, and on inspection the pus is found to trickle down at the posterior end of the inferior turbinated body instead of across its middle. It will be remembered, however, that in some cases of disease of the antrum there is little or no pain, and that in others there is little or no discharge. In cases of this variety the most

important points in the diagnosis of suppurative inflammation of the autrum are:

1. If there is no discharge there is likely to be much pain from the pent-up secretions.

2. Disease about the roots of the teeth is apt to be present; and

3. The history will often point to the origin of the disease.

In a case with only moderate discharge and no pain, or history of an acute attack, the absence of diseased teeth and the position of the pus far back in the nasal cavity would point to disease of the ethmoid cells instead of the cavity of the antrum.

Polypi, or malignant growths of the antrum, can only be detected when they have protruded, or when the cavity has been opened.

The progress of the disease is usually slow, unless appropriate treatment be adopted. When the opening into the naris is completely closed the patient suffers severe and exhausting pain, the pent-up secretions cause gradual distension of the walls of the cavity, which may encroach upon the orbit, nasal cavity or palate, or which may cause marked bulging and deformity of the cheek. If left to itself the cavity may open in any of these directions. In some instances the putrid secretions that are swallowed cause serious derangement of the digestive organs and a gradual decline in health.

In acute inflammation of the antrum medical treatment by fomentations, local blood-letting, and salines, is important, but when suppuration has taken place surgical measures must be adopted. Free exit must be given to the pus, preferably through the alveolar process. When a diseased tooth is found to be the cause, it should be extracted and the opening left by its fang enlarged sufficiently to allow free drainage. Sometimes the abscess points just above the teeth at the alveolar process, and then may be opened in that position, but this is not a favorable

point for the opening on account of the difficulty of keeping it patent.

If the teeth are sound it is best to draw the first molar, as its sockets are deeper than those of others, and it is the most liable to decay; but if the patient has already lost one of the upper bicuspids or molars the antrum may be entered through the space left. It has been objected to selecting this spot that the bone where a tooth has been lost some time previously is much harder than elsewhere, but this offers no serious impediment to the operation, therefore it seems unwise to sacrifice a tooth.

The opening may be made with a common trochar but a bone drill answers the purpose better. The drill may be worked by a dental engine, but this is unnecessary, as with a conical burr bone drill the opening is easily made by hand in three or four minutes. Care should be taken to hold the drill so that as it enters the cavity it may not plunge suddenly through and wound the opposite wall. The opening should be drilled on a line with the internal canthus of the eye upon the same side, which insures striking the central position of the antrum providing it is of normal shape. Occasionally the antrum varies much from the typical size and shape, and in a few instances bony septa have been found traversing it. In cases of this kind it is necessary to scrape out the partitions sufficiently to allow thorough cleansing.

It is best to make a comparatively large opening about a quarter of an inch in diameter in order that it may be easily kept free, and that drainage and washing may be perfect. During the treatment the opening should be filled with a roll of cotton or gauze to prevent the entrance of food and to delay healing until the lining of the cavity has become healthy, or it may be kept patent by a small metallic tube which a dentist may fasten to an ordinary plate and which may be closed while the patient is eating by a small

cork. After the operation the subsequent treatment of the case consists of washing out the cavity with antiseptic and astringent solutions. I have used with greatest satisfaction a spray or small injection of peroxide of hydrogen three or four times a week and a wash of listerine ℥ss—℥i to ℥i of saturated solution of boric acid twice a day. This wash should always be used luke-warm.

If there is no necrosis of bone the case may be expected to recover in from two to six weeks, though occasionally a tendency to renewed inflammation may make it expedient to keep the opening much longer.

I have seen six cases of this disease.

Case 1 was that of a man about twenty-five years of age who came to me six or seven years ago. He suffered no pain and complained only of catarrh. There was a free opening into the naris and the discharge was not very abundant. The annoyance was so slight that he disliked to have the antrum opened. I saw him about five years later and found him still in the same condition. He had done nothing for it and still objected to the necessary operation.

Case 2. Mrs. A. D. C., æt. 44, came to me from Wisconsin two years ago. For one year had been troubled with discomfort and often pain in the left cheek, which became worse and swelled whenever she took cold. She was also annoyed by a purulent discharge from the nostril and into the throat. I found that there had been a spontaneous opening into the mouth which had left a small fistula, but it was so small that pus constantly filled the antrum and escaped from the nose. I had the cavity syringed out through this small opening twice a day with a saturated solution of boric acid. In three weeks the purulent discharge had entirely ceased, but the washing was continued less frequently for four or five weeks longer. The patient had suffered slightly for eight years with rheumatism, which may possibly have been the cause of the disease in the antrum. For this she

was given small doses of iodide of potassium. She returned to her home apparently perfectly cured and I have reason to believe there has been no return of the disease.

Case 3. Mrs. J. L. F., æt. 48, came to me in February of this year complaining of pain in the left cheek with some purulent discharge into the left naris. The trouble had begun four years previously when she had had her teeth drawn. I found that there had been a fistulous opening near the site of the canine tooth, but of this there now remained only a *cul-de-sac* about three eighths of an inch in depth and an eighth of an inch in diameter. Through this I perforated the antrum with a drill, and subsequently washed the cavity with peroxide of hydrogen and had her inject it twice a day with a warm saturated solution of boric acid. At the end of three weeks all purulent discharge had ceased and the patient felt perfectly well. She then returned to her home with instructions to continue the wash for two or three weeks.

Case 4. E. R., æt. 34, came to me March 8th, 1887. He had suffered greatly with the nasal symptoms of suppurative inflammation of the antrum for about two years, though during a part of that time he had been free from the symptoms. This had been caused by a diseased tooth which the dentist had tried to save until six months previous to his consulting me—when it had been drawn. Subsequently he seems to have nearly recovered, but for two months he had been greatly distressed by the offensive discharge into his throat. I opened the cavity with a large drill at the site from which the first molar had been removed and subsequently washed the cavity as already recommended. At the end of three weeks there was very little purulent discharge but the opening was closing rapidly. I did not see the patient for a week afterward, but he then reported that two or three days after his last visit the op-

ening closed completely and remained so a few days when he again began to have pain in the cheek. I then enlarged the canal with the same drill and renewed the treatment. Three weeks later the secretion of pus had entirely ceased. There was no secretion of pus for a week afterward, when he caught a bad cold and the cavity filled with muco pus in thirty-six hours, during which time he had omitted to remove the pledget of cotton from the opening. In this case the inferior turbinated body was greatly swollen and the opening into the nostril from the antrum comparatively large. I thought that the secretion from the nose had filled the cavity, I therefore cauterized the turbinated body to reduce its size. Continued the same local treatment and directed him to have a tube fitted to the opening to keep it patent for several months. He did not follow this advice, but allowed the opening to close; however, there has been no purulent discharge since.

Case 5. Mrs. I., æt. 36, sent to me from Minnesota March 22, 1887. Suppurative inflammation of right antrum, due to a diseased tooth, of a year's duration. I opened the antrum as in the last case and used the same local treatment. At the end of three weeks all purulent discharge had ceased and it has not returned. But the cavity was kept open for two months and then she was directed to leave out the cotton and allow it to heal. Recovery seems perfect.

Case 6. A young woman æt. about 25. Has complained of catarrh for many months, and recently of swelling of the right cheek and a gum boil near right canine tooth. The symptoms and signs in this case are very indistinct, but Dr. Brophy confirms my suspicions of suppurative inflammation of the antrum. I expect to open the cavity soon.

64 State Street, Chicago, June 9, 1887.